WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

an insulating film comprising silicon oxide on an insulating surface, wherein the insulating film includes halogen at a concentration of $5x10^{20}$ cm⁻³ or less and carbon at a concentration of $5x10^{19}$ cm⁻³ or less which are detected by second ion mass spectroscopy.

- 2. A device according to claim 1, wherein the halogen is chlorine.
- 3. A device according to claim 1, wherein the halogen is fluorine.
- 4. A device according to claim 1,

wherein the insulating film includes carbon at a concentration of $1x10^{18}$ cm⁻³ or less which is detected by the second ion mass spectroscopy.

5. A device according to claim 1,

wherein the insulating film includes halogen at a concentration of 1×10^{17} cm⁻³ or more which is detected by the second ion mass spectroscopy.

- A device according to claim 1,
 wherein the insulating film is a gate insulating film.
- 7. A device according to claim 1, wherein the insulating film is an insulating film in a thin film transistor.
- 8. A device according to claim 1, wherein the insulating film covers an even surface over a glass substrate.

9. A device according to claim 1,

wherein the insulating film is formed by plasma chemical vapor deposition using an organic silane.

10. A device according to claim 9,

wherein the organic silane comprises at least a material selected from the group consisting of $Si(OC_2H_5)_4$, $Si_2O(OC_2H_5)_6$, $Si_3O_2(OC_2H_5)_8$, $Si_4O_3(OC_2H_5)_{10}$ and $Si_5O_4(OC_2H_5)_{12}$.

11. A semiconductor device comprising:

a crystalline semiconductor island on an insulating surface; and

an insulating film including silicon oxide to cover the crystalline semiconductor island,

wherein the insulating film includes halogen at a concentration of $5x10^{20}$ cm⁻³ or less and carbon at a concentration of $5x10^{19}$ cm⁻³ or less.

12. A device according to claim 11,

wherein the concentrations of halogen and carbon are detected by secondary ion mass spectroscopy.

- 13. A device according to claim 11, wherein the halogen is chlorine.
 - 14. A device according to claim 11, wherein the halogen is fluorine.
 - 15. A device according to claim 11,

wherein the insulating film includes carbon at a concentration of 1x10¹⁸ cm⁻³ or less.

16. A device according to claim 11,

wherein the insulating film includes halogen at a concentration of 1 x 10^{17} cm⁻³ or more.

17. A device according to claim 11,

wherein the insulating film is formed by plasma chemical vapor deposition using an organic silane.

18. A device according to claim 17,

wherein the organic silane comprises at least a material selected from the group consisting of $Si(OC_2H_5)_4$, $Si_2O(OC_2H_5)_6$, $Si_3O_2(OC_2H_5)_8$, $Si_4O_3(OC_2H_5)_{10}$ and $Si_5O_4(OC_2H_5)_{12}$.

- 19. A semiconductor device including at least a thin film transistor comprising:
 - a crystalline semiconductor island on an insulating surface;
 - a silicon oxide film over the crystalline semiconductor island; and
- a conductive film including at least one of aluminum, titanium, and titanium nitride, said conductive film being formed on the silicon oxide film,

wherein the silicon oxide film includes halogen at a concentration of $5x10^{20}$ cm⁻³ or less and carbon at a concentration of $5x10^{19}$ cm⁻³ or less.

20. A device according to claim 19,

wherein the concentrations of halogen and carbon are detected by secondary ion mass spectroscopy.

- 21. A device according to claim 19, wherein the halogen is chlorine.
- 22. A device according to claim 19, wherein the halogen is fluorine.

23. A device according to claim 19,

wherein the silicon oxide film includes carbon at a concentration of $1x10^{18}$ cm³ or less.

24. A device according to claim 19,

wherein the silicon oxide film includes halogen at a concentration of 1 x 10^{17} cm⁻³ or more.

25. A device according to claim 19,

wherein the silicon oxide film is formed by plasma chemical vapor deposition using an organic silane.

26. A device according to claim 17,

wherein the organic silane comprises at least a material selected from the group consisting of $Si(OC_2H_5)_4$, $Si_2O(OC_2H_5)_6$, $Si_3O_2(OC_2H_5)_8$, $Si_4O_3(OC_2H_5)_{10}$ and $Si_5O_4(OC_2H_5)_{12}$.

- 27. A semiconductor device including at least a thin film transistor comprising:
 - a crystalline semiconductor island on an insulating surface;
- a gate insulating film including silicon oxide on the crystalline semiconductor island; and
 - a gate electrode on the gate insulating film,

wherein the gate insulating film includes halogen at a concentration of $5x10^{20}$ cm⁻³ or less and carbon at a concentration of $5x10^{19}$ cm⁻³ or less.

28. A device according to claim 27,

wherein the concentrations of halogen and carbon are detected by secondary ion mass spectroscopy.

29. A device according to claim 27, wherein the halogen is chlorine.

- 30. A device according to claim 27, wherein the halogen is fluorine.
- 31. A device according to claim 27,

wherein the gate insulating film includes carbon at a concentration of $1x10^{18}$ cm⁻³ or less.

32. A device according to claim 27,

wherein the gate insulating film includes halogen at a concentration of 1 x 10^{17} cm⁻³ or more.

33. A device according to claim 27,

wherein the gate insulating film is formed by plasma chemical vapor deposition using an organic silane.

34. A device according to claim 33,

wherein the organic silane comprises at least a material selected from the group consisting of $Si(OC_2H_5)_4$, $Si_2O(OC_2H_5)_6$, $Si_3O_2(OC_2H_5)_8$, $Si_4O_3(OC_2H_5)_{10}$ and $Si_5O_4(OC_2H_5)_{12}$.